

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-2. Please cancel Claims 1-2.

3. (Currently Amended) ~~The system of claim 2;~~ A system for processing medical image data corresponding to a breast, comprising:

a source of a three-dimensional data volume representing at least one physical property within the breast;

a processor coupled with said source to receive said three-dimensional data volume to compute therefrom a two-dimensional thick-slice image representing said at least one physical property of the breast in a slab-like subvolume thereof;

a display coupled with said processor and displaying said thick-slice image to a viewer;

an archiving device coupled with said processor to receive said two-dimensional thick-slice image, said archiving device generating an archival dataset including said two-dimensional thick-slice image, said archiving device transferring said archival dataset to a tangible storage medium for archiving purposes;

said display further displaying a two-dimensional planar view image corresponding to said at least one physical property along a planar slice within the breast, wherein said archival dataset further comprises said two-dimensional planar image;

wherein said at least one physical property is a sonographic property, and wherein said three-dimensional data volume is not included in said archival dataset thereby promoting archival efficiency in said archiving device.

4. (Original) The system of claim 3, wherein said system passively discards said three-dimensional data volume in a circular buffer arrangement, and wherein said tangible storage medium is selected from the group consisting of: paper, film, magnetic disk, optical disk, magnetic tape, and non-volatile integrated circuit memory.

5. Please cancel Claim 5.

6. (Currently Amended) ~~The system of claim 5;~~ A system for processing medical image data corresponding to a breast, comprising:

a source of a three-dimensional data volume representing at least one physical property within the breast;

a processor coupled with said source to receive said three-dimensional data volume to compute therefrom a two-dimensional thick-slice image representing said at least one physical property of the breast in a slab-like subvolume thereof;

a display coupled with said processor and displaying said thick-slice image to a viewer;

an archiving device coupled with said processor to receive said two-dimensional thick-slice image, said archiving device generating an archival dataset including said two-dimensional thick-slice image, said archiving device transferring said archival dataset to a tangible storage medium for archiving purposes;

said display further displaying a two-dimensional planar view image corresponding to said at least one physical property along a planar slice within the breast, wherein said archival dataset further comprises said two-dimensional planar image; and

a user input device receiving a first viewer input identifying on said thick-slice image a location of interest in the breast, wherein said planar view image corresponds to a planar slice passing through that location of interest in the breast;

said user input device further receiving a second viewer input identifying said location of interest for archiving, wherein said archival dataset includes the thick-slice image and the planar view image corresponding to that location of interest.

7. (Original) The system of claim 6, said user input device further receiving a third viewer input requesting lesion volume information for said location of interest, said display providing said lesion volume information to the viewer responsive to said third viewer input.

8. (Currently Amended) ~~The system of claim 5;~~ A system for processing medical image data corresponding to a breast, comprising:

a source of a three-dimensional data volume representing at least one physical property within the breast;

a processor coupled with said source to receive said three-dimensional data volume to compute therefrom a two-dimensional thick-slice image representing said at least one physical property of the breast in a slab-like subvolume thereof;

a display coupled with said processor and displaying said thick-slice image to a viewer;

an archiving device coupled with said processor to receive said two-dimensional thick-slice image, said archiving device generating an archival dataset including said two-dimensional thick-slice image, said archiving device transferring said archival dataset to a tangible storage medium for archiving purposes;

said display further displaying a two-dimensional planar view image corresponding to said at least one physical property along a planar slice within the breast, wherein said archival dataset further comprises said two-dimensional planar image; and

a user input device receiving a first viewer input identifying on said thick-slice image a location of interest in the breast, wherein said planar view image corresponds to a planar slice passing through that location of interest in the breast;

said user input device further receiving a second viewer input identifying said location of interest for archiving, wherein said archival dataset includes the thick-slice image corresponding to that location of interest but does not include the planar view image corresponding to that location of interest.

9-10. Please cancel Claims 9-10.

11. (Currently Amended) ~~The system of claim 10;~~ A system for processing medical image data corresponding to a breast, comprising:

a source of a three-dimensional data volume representing at least one physical property within the breast;

a processor coupled with said source to receive said three-dimensional data volume to compute therefrom a two-dimensional thick-slice image representing said at least one physical property of the breast in a slab-like subvolume thereof;

a display coupled with said processor and displaying said thick-slice image to a viewer; and

an archiving device coupled with said processor to receive said two-dimensional thick-slice image, said archiving device generating an archival dataset including said two-dimensional thick-slice image, said archiving device transferring said archival dataset to a tangible storage medium for archiving purposes;

said processor computing additional two-dimensional thick-slice images corresponding to different slab-like subvolumes of the breast to form a set of thick-slice images, said slab-like subvolumes for said set of thick-slice images collectively occupying substantially all of a clinically relevant portion of the breast volume, said display displaying each of said set of thick-slice images to the viewer;

said archival dataset including each of said set of thick-slice images;

wherein said slab-like subvolumes have an average thickness roughly equal to about 0.5-3.0 times an expected size of lesions L to be detected according to an imaging modality of said medical image data.

12. (Original) The system of claim 11, wherein said imaging modality is ultrasound, and wherein said slab-like volumes have an average thickness lying between about 2 mm and 20 mm.

13. (Currently Amended) The system of claim 11 40, said display further displaying a two-dimensional planar view image corresponding to said at least one physical property along a planar slice within the breast, said system further comprising a user input device receiving a first viewer input identifying on a first of said set of thick-slice images a first location of interest in the breast, wherein said planar view image corresponds to a planar slice passing through said first location of interest in the breast.

14. (Original) The system of claim 13, said archival dataset comprising a first annotation for said first thick-slice image identifying said first location of interest thereon, said archival dataset further comprising said planar view image corresponding to said first location of interest, said archival dataset being configured to facilitate simultaneous, side-by-side viewing of said first thick-slice image, said first annotation, and said planar view image corresponding to said first location of interest.

15. (Original) The system of claim 14, said archival dataset being configured to facilitate simultaneous, side-by-side viewing of (i) said first thick-slice image including said first annotation, (ii) said planar view image corresponding to said first location of interest, and (iii) all remaining members of said set of thick-slice images.

16. (Original) The system of claim 15, said user input device receiving a second viewer input identifying a second location of interest in the breast, said archival dataset further configured to facilitate simultaneous, side-by-side viewing of (i) a thick-slice image from said set of thick-slice images upon which said second location of interest in the breast was identified, (ii) a second annotation received corresponding to said

second location of interest, and (iii) a planar view image corresponding to said second location of interest.

17. (Currently Amended) ~~The system of claim 9, A system for processing medical image data corresponding to a breast, comprising:~~

a source of a three-dimensional data volume representing at least one physical property within the breast;

a processor coupled with said source to receive said three-dimensional data volume to compute therefrom a two-dimensional thick-slice image representing said at least one physical property of the breast in a slab-like subvolume thereof;

a display coupled with said processor and displaying said thick-slice image to a viewer; and

an archiving device coupled with said processor to receive said two-dimensional thick-slice image, said archiving device generating an archival dataset including said two-dimensional thick-slice image, said archiving device transferring said archival dataset to a tangible storage medium for archiving purposes;

said processor computing additional two-dimensional thick-slice images corresponding to different slab-like subvolumes of the breast to form a set of thick-slice images, said slab-like subvolumes for said set of thick-slice images collectively occupying substantially all of a clinically relevant portion of the breast volume, said display displaying each of said set of thick-slice images to the viewer;

said system further comprising a user input device receiving a viewer input identifying, in the event that the viewer has found no interesting locations in the breast, a most benign-looking one of said set of thick-slice images for archiving, said archival dataset including said most benign-looking one of said set of thick-slice images, said system dissociating said three-dimensional data volume and all others of said set of thick-slice images from said dataset.

18. (Original) The system of claim 17, wherein said three-dimensional data volume and said others of said set of thick-slice images are dissociated in a passive deletion process including a circular buffer arrangement.

19. (Currently Amended) The system of claim 11 [[9]], said processor further processing said three-dimensional data to detect anatomical abnormalities in the breast, said display annotating each thick-slice image associated with at least one detected abnormality to identify thereon a location of said at least one detected abnormality, wherein said archival dataset comprises at least each of said annotated thick-slice images and each of said associated annotations.

20. (Original) The system of claim 19, said system being further configured to prevent the viewer from dissociating any of said annotations with associated thick-slice image.

21-40. Please cancel Claims 21-40.

41. (Currently Amended) ~~The method of claim 39,~~ A method, comprising:
receiving a three-dimensional data volume representing at least one physical
property within a breast;
computing from said three-dimensional data volume a two-dimensional thick-slice
image representing said at least one physical property in a slab-like subvolume of the
breast;
displaying said two-dimensional thick-slice image to a viewer in conjunction with
at least one x-ray mammogram image of the breast;
generating an archival dataset including said two-dimensional thick-slice image
and including data that associates said two-dimensional thick-slice image with said at
least one x-ray mammogram image; and

displaying a two-dimensional planar view image corresponding to said at least one physical property along a planar slice within the breast, said archival dataset further including said two-dimensional planar image;

wherein said at least one physical property is a sonographic property, and wherein said slab-like subvolume has a thickness in the range of 2 mm - 20 mm.

42. (Original) The method of claim 41, further comprising transferring said archival dataset to a tangible storage medium selected from the group consisting of: paper, film, magnetic disk, optical disk, magnetic tape, and non-volatile integrated circuit memory.

43. (Currently Amended) The method of claim ~~41~~ 39, further comprising receiving a first viewer input identifying on said thick-slice image a location of interest in the breast, wherein said planar view image corresponds to a planar slice passing through that location of interest in the breast.

44. (Original) The method of claim 43, further comprising receiving a second viewer input identifying said location of interest for archiving, wherein said archival dataset includes the thick-slice image and the planar view image corresponding to that location of interest.

45. (Original) The method of claim 44, further comprising:
receiving a third viewer input requesting lesion volume information for said location of interest;
automatically segmenting a lesion centered near said location of interest;
automatically computing a lesion volume metric corresponding to the segmented lesion; and
displaying said lesion volume metric to the viewer.

46. (Original) The method of claim 44, further comprising:
- generating additional two-dimensional thick-slice images corresponding to different slab-like subvolumes of the breast to form a set of thick-slice images, said slab-like subvolumes for said set of thick-slice images collectively occupying substantially all of a clinically relevant portion of the breast volume;
 - displaying each of said set of thick-slice images to the viewer; and
 - including each of said set of thick-slice images in said archival dataset.